

**California High-Speed Rail Authority**



**RFP No.: HSR 13-57**

**Request for Proposals for Design-Build  
Services for Construction Package 2-3**

**Reference Material, Part C.4  
Geotechnical Data Report (GDR)  
(Erratum)**



# CALIFORNIA HIGH-SPEED TRAIN

## Engineering Report

Preliminary Engineering  
for Procurement  
Record Set Submission  
**Fresno to Bakersfield**  
Sierra Subdivision  
Construction Package 2-3  
Erratum to  
Geotechnical Data Report

RFP No.: 13-57 – Addendum No. 1 - 05/30/2014

April 2014





**Preliminary Engineering for  
Procurement  
Record Set Submission  
Fresno to Bakersfield  
Sierra Subdivision  
Construction Package 2-3  
Erratum to Geotechnical Data Report**

*Prepared by:*

URS/HMM/Arup Joint Venture

April 2014



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## Executive Summary

This Erratum includes errata and addenda to the Record Set issue of the Geotechnical Data Report (GDR) for the Fresno to Bakersfield Subdivision Construction Package 2-3 of the California High-Speed Train Project.

Changes in this Erratum are as follows:

- Inclusion of additional piezometer readings between January 6, 2014, and April 16, 2014.
- Correction to mislabeling of Table 6.7-1 summarizing the results of soil corrosion testing.
- Inclusion of previously omitted piezometer installation logs as a supplement to GDR Appendix B.

The same chapter and section numbering has been retained. Italicized font represents commentary only. Normal font represents the replicated text, including any correction(s).



## 5.0 Ground Investigations

### 5.5 Observation Wells

#### 5.5.2 Frequency of Testing

##### 5.5.2.1 Results

*Additional manual measurements of water level taken after 1/6/2014 are presented in Table 5.5-2.*

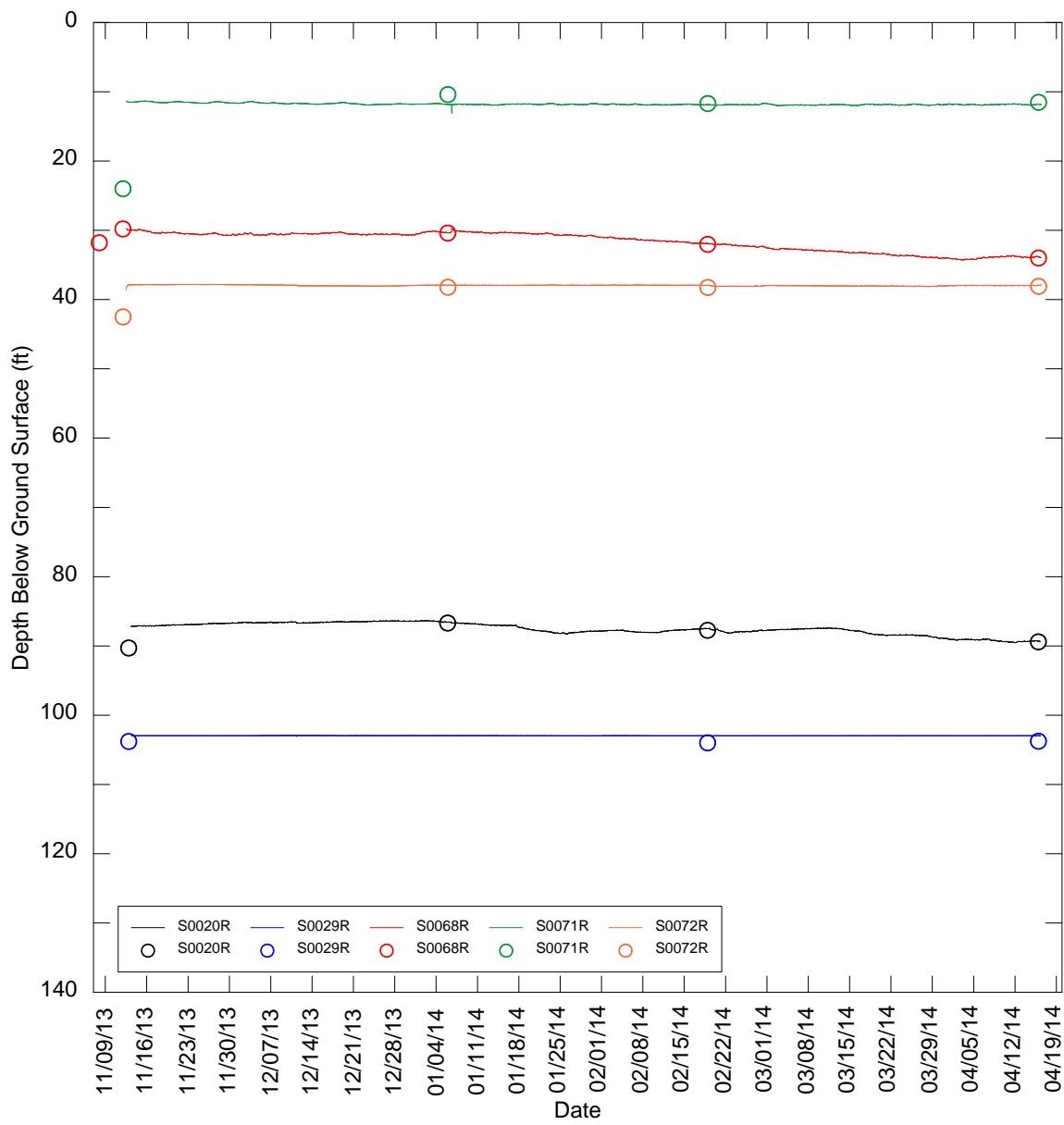
**Table 5.5-2**  
Groundwater Levels Measured in Standpipe Piezometers

Piezometer ID	S0020R	S0029R	S0068R	S0071R	S0072R
Well Box Elevation	278.2	260.1	198.2	192.2	196.0
Date Read	Measured Depth Groundwater <sup>[1]</sup> (ft)				
10/29/2013	88.4 <sup>[2]</sup>				
11/8/2013			31.8 <sup>[2]</sup>		
11/12/2013			29.8	24.0	42.5
11/13/2013	90.3	103.8			
1/6/2014	86.7	–	30.4	10.4	38.2
2/19/2014	87.8	104.0	32.0	11.7	38.3
4/16/2014	89.4	103.8	34.0	11.5	38.1

<sup>[1]</sup> Measured with water meter

<sup>[2]</sup> Measured prior to well development

*Additional datalogger and manual measurements of water level taken after 1/6/2014 are presented in Figure 5.5-2.*



**Figure 5.5-2**  
Groundwater Depths Measured in Standpipe Piezometers

## 6.0 Laboratory Investigations

### 6.7 Soil Corrosion Testing

*The labels of Chloride and Sulfate in Table 6.7-1 were switched. The correct labels are shown below.*

**Table 6.7-1**  
Summary of Results from Soil Corrosion Tests

Test	Test Reference	No. of Tests	Range of Values	Mean Value	Standard Deviation
Minimum Resistivity	ASTM G 57	5	399 to 6,284 ohm-cm	1,830 ohm-cm	2,498 ohm-cm
pH	ASTM D 4327	5	6.4 to 9.92	8	2
Sulfate	ASTM D 4327	5	50 to 437 ppm	204 ppm	173 ppm
Chloride	ASTM D 4327	5	24 to 963 ppm	437 ppm	474 ppm

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## **Appendix B-1**

### **Piezometer Logs**





# STANDPIPE PIEZOMETER INSTALLATION LOG

(continued)

PIEZOMETER NO.:

BORING NO.:  
**S0020R**

**Project:** California High Speed Rail - Fresno to Bakersfield  
**Location:** Manning Ave East of Cedar Ave  
**Client:** California High Speed Rail Authority  
**Drilling Co.:** Gregg Drilling  
**Driller:** E. Santellan

**Project No.:** 131577-00  
**Project Mgr:** M. Walker  
**Field Eng. Staff:** CH  
**Date Installed:** 8/21/2013

Ground El.: 278.21 ft.	Boring Location: N: 2104378.614 E: 6341583.03 Horizontal Datum: NAD 83 CA Z4	Well Cover: <input type="checkbox"/> Guard Pipe <input checked="" type="checkbox"/> Roadway Box <input type="checkbox"/> Other: _____
Vertical Datum: NAVD 88		

<b>SOIL/ROCK CONDITIONS</b>	<b>BOREHOLE BACKFILL</b>	<b>Total Number of Piezometers in Borehole</b> 1		
<p>See corresponding borehole log for stratigraphy</p> <p>Neat Cement Grout</p> <p>4-ft Bentonite Plug</p> <p>#3 Filter Sand</p>		Type of Protective Cover/Lock	Traffic-rated well box	
		Length	1.0 ft.	
		Inside Diameter	10.0 in.	
		Height/Depth of Cover Above/Below Ground Surface	0.0 ft.	
		Height/Depth of Riser Pipe Above/Below Ground Surface	0.25 ft.	
		Depth of Bottom of Casing	ft.	
		Type of Seal	Top of Seal (ft)	Thickness (ft)
		No casing installed		
		Type of Riser Pipe	2" PVC Sch 40 Riser	
		Inside Diameter of Riser Pipe	2.0 in.	
Type of Backfill Around Riser	Neat cement grout backfill above a 4.0 ft bentonite plug			
Diameter of Borehole	7.0 in.			
Depth of Top of Well Screen	80.0 ft.			
Type of Screen	2" PVC Sch 40 Screen			
Screen Gauge or Size of Openings	0.02 in.			
Diameter of Screen	2.0 in.			
Type of Backfill Around Screen	#3 sand			
Depth of Bottom of Well Screen	100.0 ft.			
Depth of Bottom of Silt Trap	100.5 ft.			
Depth of Bottom of Borehole	101.5 ft.			

101.5 ft. (Bottom of Exploration)

\*Note: Numbers refer to depth from ground surface in feet  
 (+) = depth below ground surface  
 (-) = depth above ground surface

$$80.0 \text{ ft.} + 20.0 \text{ ft.} + 0.5 \text{ ft.} = 100.5 \text{ ft.}$$

Length of Riser (L<sub>1</sub>)      Length of Screen (L<sub>2</sub>)      Length of Silt Trap (L<sub>3</sub>)      Total Length

**Comments:** Sand type: CEMEX #3 sand, clean, graded, kiln dried, Monterey (50 lb bags)  
 Bentonite: EnviroPlug, medium, Wyo-Ben, Inc. (50 lb bags)  
 Cement: Basalite Type II-V cement, Portland cement (47 lb bags)





# STANDPIPE PIEZOMETER INSTALLATION LOG

(continued)

PIEZOMETER NO.:

BORING NO.:  
**S0029R**

<b>Project:</b> California High Speed Rail - Fresno to Bakersfield	<b>Project No.:</b> 131577-00
<b>Location:</b> Topeka Ave South of Conejo	<b>Project Mgr:</b> M. Walker
<b>Client:</b> California High Speed Rail Authority	<b>Field Eng. Staff:</b> NG/SV
<b>Drilling Co.:</b> Gregg Drilling	<b>Date Installed:</b> 8/28/2013
<b>Driller:</b> E. Santellan	

Ground El.: 260.07 ft.	Boring Location: N: 2070526.117 E: 6350083.042 Horizontal Datum: NAD 83 CA Z4	Well Cover: <input type="checkbox"/> Guard Pipe <input checked="" type="checkbox"/> Roadway Box <input type="checkbox"/> Other: _____
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<b>SOIL/ROCK CONDITIONS</b>	<b>BOREHOLE BACKFILL</b>	Total Number of Piezometers in Borehole 1		
		Type of Protective Cover/Lock Traffic-rated well box with 9/16" hex bolts		
<p>See corresponding borehole log for stratigraphy</p> <p>Neat Cement Grout</p> <p>2-ft Bentonite Plug</p> <p>#3 Filter Sand</p>		Length	1.0 ft.	
		Inside Diameter	10.0 in.	
		Height/Depth of Cover Above/Below Ground Surface	0.25 ft.	
		Height/Depth of Riser Pipe Above/Below Ground Surface	0.16 ft.	
		Depth of Bottom of Casing	ft.	
		Type of Seal	Top of Seal (ft)	
		No casing installed		
		Type of Riser Pipe	2" PVC Sch 40 Riser	
		Inside Diameter of Riser Pipe	2.0 in.	
		Type of Backfill Around Riser	Neat cement grout backfill above a 5.0 ft bentonite plug	
Diameter of Borehole	5.0 in.			
Depth of Top of Well Screen	85.0 ft.			
Type of Screen	2" PVC Sch 40 Screen			
Screen Gauge or Size of Openings	0.02 in.			
Diameter of Screen	2.0 in.			
Type of Backfill Around Screen	#3 sand			
Depth of Bottom of Well Screen	105.0 ft.			
Depth of Bottom of Silt Trap	105.5 ft.			
Depth of Bottom of Borehole	125.0 ft.			

125.0 ft. (Bottom of Exploration)

\*Note: Numbers refer to depth from ground surface in feet  
(+) = depth below ground surface  
(-) = depth above ground surface

$$85.0 \text{ ft.} + 20.0 \text{ ft.} + 0.5 \text{ ft.} = 105.5 \text{ ft.}$$

Length of Riser (L<sub>1</sub>)      Length of Screen (L<sub>2</sub>)      Length of Silt Trap (L<sub>3</sub>)      Total Length

**Comments:** Sand type: CEMEX #3 sand, clean, graded, kiln dried, Monterey (50 lb bags)  
Bentonite: EnviroPlug, medium, Wyo-Ben, Inc. (50 lb bags)  
Cement: Basalite Type II-V cement, Portland cement (47 lb bags)





# STANDPIPE PIEZOMETER INSTALLATION LOG

(continued)

PIEZOMETER NO.:

BORING NO.:  
**S0068R**

<b>Project:</b>	California High Speed Rail - Fresno to Bakersfield	<b>Project No.:</b>	131577-00
<b>Location:</b>	SR 43 South of Ave 144	<b>Project Mgr:</b>	M. Walker
<b>Client:</b>	California High Speed Rail Authority	<b>Field Eng. Staff:</b>	SV
<b>Drilling Co.:</b>	Gregg Drilling	<b>Date Installed:</b>	10/23/2013
<b>Driller:</b>	D. Heavilin		

<b>Ground El.:</b> 198.24 ft.	<b>Boring Location:</b> N: 1898742.757 E: 6409397.825	<b>Well Cover:</b> <input type="checkbox"/> Guard Pipe <input checked="" type="checkbox"/> Roadway Box <input type="checkbox"/> Other: _____
<b>Vertical Datum:</b> NAVD 88	<b>Horizontal Datum:</b> NAD 83 CA Z4	

<b>SOIL/ROCK CONDITIONS</b>	<b>BOREHOLE BACKFILL</b>	<b>Total Number of Piezometers in Borehole</b> 1		
<p>See corresponding borehole log for stratigraphy</p> <p>Neat Cement Grout</p> <p>6-ft Bentonite Plug</p> <p>#3 Filter Sand</p>		<b>Type of Protective Cover/Lock</b>	Traffic-rated well box	
		Length	1.0 ft.	
		Inside Diameter	10.0 in.	
		Height/Depth of Cover Above/Below Ground Surface	0.25 ft.	
		Height/Depth of Riser Pipe Above/Below Ground Surface	0.16 ft.	
		<b>Depth of Bottom of Casing</b>	ft.	
		<b>Type of Seal</b>	<b>Top of Seal (ft)</b>	<b>Thickness (ft)</b>
		No casing installed		
		<b>Type of Riser Pipe</b>	2" PVC Sch 40 Riser	
		Inside Diameter of Riser Pipe	2.0 in.	
Type of Backfill Around Riser	Neat cement grout backfill above a 6.0 ft bentonite plug			
<b>Diameter of Borehole</b>	5.0 in.			
<b>Depth of Top of Well Screen</b>	20.5 ft.			
<b>Type of Screen</b>	2" PVC Sch 40 Screen			
Screen Gauge or Size of Openings	0.02 in.			
Diameter of Screen	2.0 in.			
Type of Backfill Around Screen	#3 sand			
<b>Depth of Bottom of Well Screen</b>	50.5 ft.			
<b>Depth of Bottom of Silt Trap</b>	51.0 ft.			
<b>Depth of Bottom of Borehole</b>	151.5 ft.			

151.5 ft. (Bottom of Exploration)

\*Note: Numbers refer to depth from ground surface in feet  
(+) = depth below ground surface  
(-) = depth above ground surface

$$20.5 \text{ ft.} + 30.0 \text{ ft.} + 0.5 \text{ ft.} = 51.0 \text{ ft.}$$

Length of Riser (L<sub>1</sub>)      Length of Screen (L<sub>2</sub>)      Length of Silt Trap (L<sub>3</sub>)      Total Length

**Comments:** Sand type: CEMEX #3 sand, clean, graded, kiln dried, Monterey (50 lb bags)  
Bentonite: EnviroPlug, medium, Wyo-Ben, Inc. (50 lb bags)  
Cement: Basalite Type II-V cement, Portland cement (47 lb bags)





# STANDPIPE PIEZOMETER INSTALLATION LOG

(continued)

PIEZOMETER NO.:

BORING NO.:  
**S0071R**

<b>Project:</b>	California High Speed Rail - Fresno to Bakersfield	<b>Project No.:</b>	131577-00
<b>Location:</b>	SR 43 South of Ave 64	<b>Project Mgr:</b>	M. Walker
<b>Client:</b>	California High Speed Rail Authority	<b>Field Eng. Staff:</b>	SV
<b>Drilling Co.:</b>	Gregg Drilling	<b>Date Installed:</b>	10/11/2013
<b>Driller:</b>	E. Santellan		

Ground El.: 192.22 ft.	Boring Location: N: 1854182.477 E: 6435478.341 Horizontal Datum: NAD 83 CA Z4	Well Cover: <input type="checkbox"/> Guard Pipe <input checked="" type="checkbox"/> Roadway Box <input type="checkbox"/> Other: _____
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<b>SOIL/ROCK CONDITIONS</b>	<b>BOREHOLE BACKFILL</b>	<b>Total Number of Piezometers in Borehole</b> 1		
See corresponding borehole log for stratigraphy		Type of Protective Cover/Lock	Traffic-rated well box	
		Length	12.0 ft.	
		Inside Diameter	10.0 in.	
		Height/Depth of Cover Above/Below Ground Surface	0.33 ft.	
		Height/Depth of Riser Pipe Above/Below Ground Surface	0.0 ft.	
		Depth of Bottom of Casing	ft.	
		Type of Seal	Top of Seal (ft.)	Thickness (ft.)
		No casing installed		
		Type of Riser Pipe	2" PVC Sch 40 Riser	
		Inside Diameter of Riser Pipe	2.0 in.	
		Type of Backfill Around Riser	Neat cement grout backfill above a 5.0 ft bentonite plug	
		Diameter of Borehole	6.0 in.	
		Depth of Top of Well Screen	36.0 ft.	
		Type of Screen	2" PVC Sch 40 Screen	
		Screen Gauge or Size of Openings	0.02 in.	
		Diameter of Screen	2.0 in.	
		Type of Backfill Around Screen	#3 sand	
		Depth of Bottom of Well Screen	56.0 ft.	
		Depth of Bottom of Silt Trap	56.5 ft.	
		Depth of Bottom of Borehole	151.5 ft.	
151.5 ft. (Bottom of Exploration)	151.5 ft.	36.0 ft. + 20.0 ft. + 0.5 ft. = 56.5 ft.	Total Length	
*Note: Numbers refer to depth from ground surface in feet (+) = depth below ground surface (-) = depth above ground surface		Length of Riser (L <sub>1</sub> )	Length of Screen (L <sub>2</sub> )	Length of Silt Trap (L <sub>3</sub> )

(not to scale)

**Comments:** Sand type: CEMEX #3 sand, clean, graded, kiln dried, Monterey (50 lb bags)  
Bentonite: EnviroPlug, medium, Wyo-Ben, Inc. (50 lb bags)  
Cement: Basalite Type II-V cement, Portland cement (47 lb bags)





# STANDPIPE PIEZOMETER INSTALLATION LOG

(continued)

PIEZOMETER NO.:

BORING NO.:  
**S0072R**

<b>Project:</b>	California High Speed Rail - Fresno to Bakersfield	<b>Project No.:</b>	131577-00
<b>Location:</b>	SR 43 North of Ave 56	<b>Project Mgr:</b>	M. Walker
<b>Client:</b>	California High Speed Rail Authority	<b>Field Eng. Staff:</b>	SV
<b>Drilling Co.:</b>	Gregg Drilling	<b>Date Installed:</b>	10/7/2013
<b>Driller:</b>	E. Santellan		

<b>Ground El.:</b> 196.00 ft.	<b>Boring Location:</b> N: 1849930.759 E: 6437978.936	<b>Well Cover:</b> <input type="checkbox"/> Guard Pipe <input checked="" type="checkbox"/> Roadway Box
<b>Vertical Datum:</b> NAVD 88	<b>Horizontal Datum:</b> NAD 83 CA Z4	<b>Other:</b> _____

<b>SOIL/ROCK CONDITIONS</b>	<b>BOREHOLE BACKFILL</b>	<b>Total Number of Piezometers in Borehole</b> 1		
<p>See corresponding borehole log for stratigraphy</p> <p>Neat Cement Grout</p> <p>5-ft Bentonite Plug</p> <p>#3 Filter Sand</p>		<b>Type of Protective Cover/Lock</b>	Traffic-rated well box	
		Length	1.5 ft.	
		Inside Diameter	10.0 in.	
		Height/Depth of Cover Above/Below Ground Surface	0.5 ft.	
		Height/Depth of Riser Pipe Above/Below Ground Surface	0.16 ft.	
		<b>Depth of Bottom of Casing</b>	0 ft.	
		<b>Type of Seal</b>	<b>Top of Seal (ft)</b>	<b>Thickness (ft)</b>
		No casing installed		
		<b>Type of Riser Pipe</b>	2" PVC Sch 40 Riser	
		Inside Diameter of Riser Pipe	2.0 in.	
Type of Backfill Around Riser	Neat cement grout backfill above a 5.0 ft bentonite plug			
<b>Diameter of Borehole</b>	7.0 in.			
<b>Depth of Top of Well Screen</b>	115.0 ft.			
<b>Type of Screen</b>	2" PVC Sch 40 Screen			
Screen Gauge or Size of Openings	0.02 in.			
Diameter of Screen	2.0 in.			
Type of Backfill Around Screen	#3 sand			
<b>Depth of Bottom of Well Screen</b>	135.0 ft.			
<b>Depth of Bottom of Silt Trap</b>	136.0 ft.			
<b>Depth of Bottom of Borehole</b>	165.0 ft.			

165.0 ft. (Bottom of Exploration)

\*Note: Numbers refer to depth from ground surface in feet  
(+) = depth below ground surface  
(-) = depth above ground surface

$$115.0 \text{ ft.} + 20.0 \text{ ft.} + 1.0 \text{ ft.} = 136.0 \text{ ft.}$$

Length of Riser (L<sub>1</sub>)      Length of Screen (L<sub>2</sub>)      Length of Silt Trap (L<sub>3</sub>)      Total Length

**Comments:** Sand type: CEMEX #3 sand, clean, graded, kiln dried, Monterey (50 lb bags)  
Bentonite: EnviroPlug, medium, Wyo-Ben, Inc. (50 lb bags)  
Cement: Basalite Type II-V cement, Portland cement (47 lb bags)

